uFR Online – Quick Start Guide

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Installing uFR Online Reader

Follow the instructions below to install your uFR Online reader.

Step 1: Power on a device

1. Connect device to a power source.
2. Wait for a few moments to device boot in Access Point mode (see LED status table below).

Step 2: Connect to the uFR Online

1. Scan for networks using your WiFi enable device (computer, smartphone etc.).
2. Connect to device named ONxxxxxx.
3. Wait for the connection to be made successfully.
4. Open your favorite web browser and navigate to http://192.168.4.1

Step 3: Set up your device

1. After web page is loaded successfully log in using default credentials (see table 1 below).
2. Wait for a few moments to device scan for an available WiFi networks.
3. Select a WiFi network and click connect button.
4. Enter password for wireless network if needed and wait to connect successfully.

Step 3: Finish setting up your device

1. Click on uFR Nano Configurator button to find out your new IP address.
2. Reboot your uFR Online reader.

uFR Online Reader settings

Follow the instructions below to change uFR Online reader settings.

Open WiFi network settings dashboard

1. Open your favorite web browser and navigate to http://<device-ip-address>
2. Log in using default credentials (see table 1 below).
3. After web page is loaded successfully, WiFi settings dashboard will be shown (illustration 1).

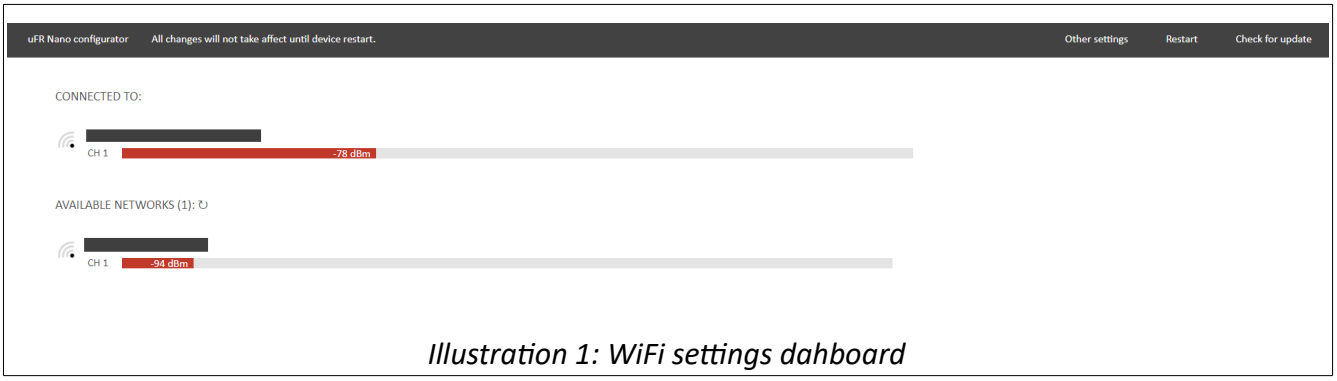

Illustration 1: WiFi settings dahboard

Open advanced settings dashboard

1. Follow the instruction above (WiFi network setting section)
2. Click on Other settings button.
3. Advanced settings dashboard will be shown on screen (illustration 2).

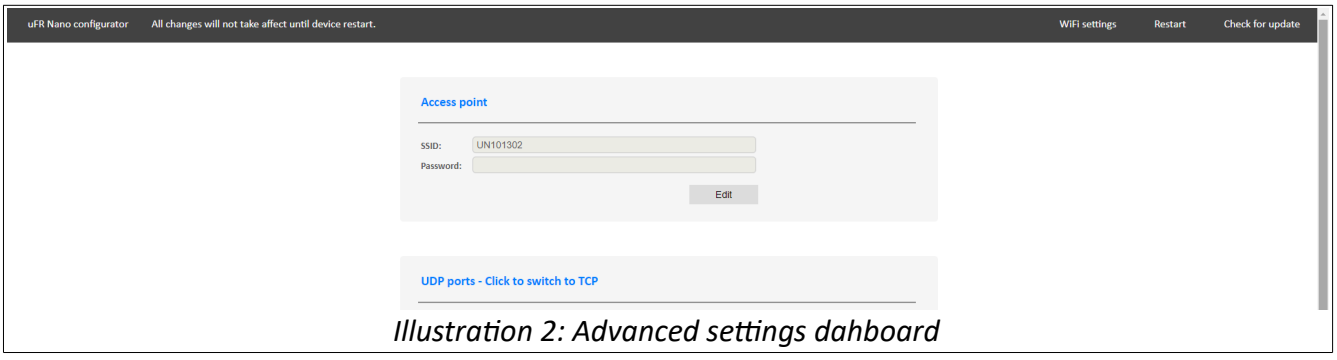

Illustration 2: Advanced settings dahboard

Access Point settings

1. Open advanced settings dashboard.
2. Click on Edit button in section Access point (illustration 3).
3. Change fields SSID and Password.
4. Click on button Save.

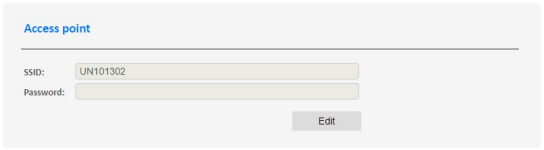

Illustration 3: Access Point section

UDP/TCP ports and protocols settings

1. Open advanced settings dashboard.
2. Click on Edit button in section UDP/TCP ports (illustration 4).
3. Change fields Port 1 and Port 2.
4. Click on button Save.
5. Click on UDP/TCP ports header text to toggle between this two protocols.

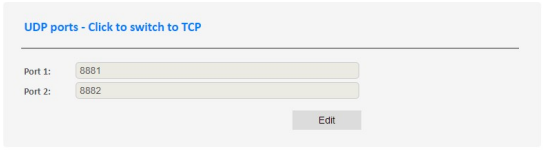

Illustration 4: TCP/UDP section

UART settings

1. Open advanced settings dashboard.
2. Click on Edit button in section UART Baud rates (illustration 5).
3. Change fields UART 1 and UART 2.
4. Click on button Save.
5. Click on UART2 RS485 disabled/enabled to toggle RS485 support on second serial port.

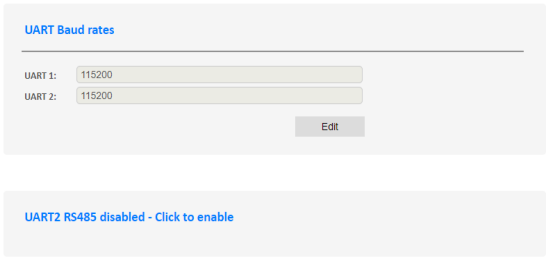

Illustration 5: UART Baud rates section

Transparent mode settings

1. Open advanced settings dashboard.
2. Click on Edit button in section Transparent mode (illustration 6).
3. Change field Reader to toggle between first and second serial ports.
4. Click on button Save.
5. Click on Transparent disabled/enabled text to toggle transparent mode.

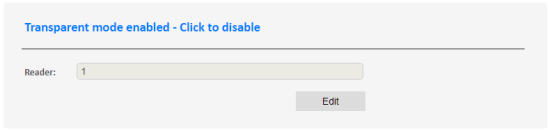

Illustration 6: Transparent mode section

Login credentials settings

1. Open advanced settings dashboard.
2. Click on Edit button in section Login (illustration 7).
3. Change fields Username and Password.
4. Click on button Save.

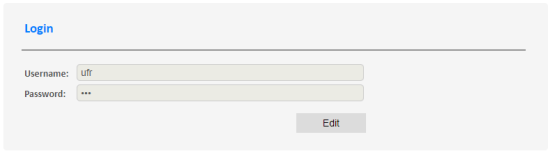

Illustration 7: Login section

Master/Slave mode settings

1. Open advanced settings dashboard.
2. Click on text Working in Master/Slave mode to toggle between this two modes(illustration 8).

Illustration 8: Master/Slave mode section

Bluetooth Serial mode settings – WIFI + BT firmware only

1. Open advanced settings dashboard.
2. Click on text Bluetooth mode enabled/disabled to toggle Bluetooth serial mode.(illustration 9).
3. **This settings is only available in master mode.**

Illustration 9: Bluetooth Serial mode section

Bluetooth HID mode settings – WIFI + HID firmware only

1. Open advanced settings dashboard.
2. Click on text Bluetooth mode enabled/disabled to toggle HID mode.(illustration 10).
3. **This settings is only available in master mode.**

Illustration 10: Bluetooth HID mode section

Host address settings

1. Open advanced settings dashboard.
2. Click on Edit button in section Host (illustration 11).
3. Change field Host.
4. Click on button Save.
5. **This settings is only available in master mode.**

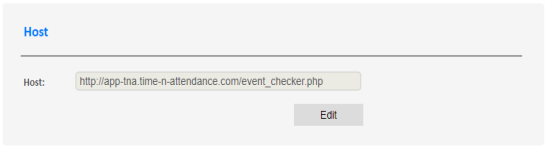

Illustration 11: Host section

Master mode settings

1. Open advanced settings dashboard.
2. Switch to master mode.
3. Click on option what you want to enable or disable.

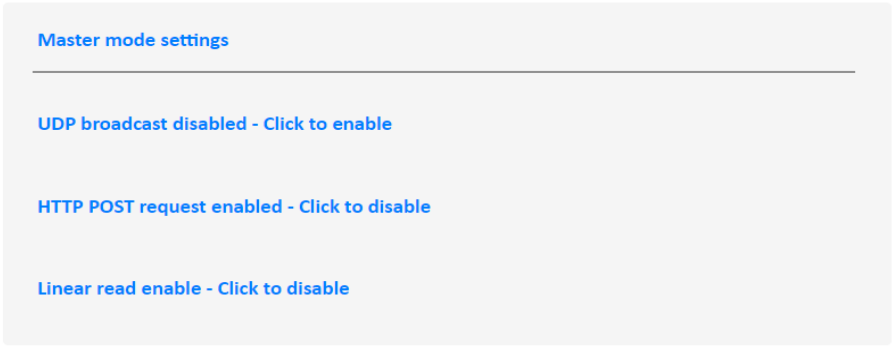

Illustration 12: Master mode section

Linear read settings

1. Open advanced settings dashboard.
2. Switch to master mode.
3. Enable Linear read.
4. Click on Edit button and change linear read settings.
5. Click on button Save.

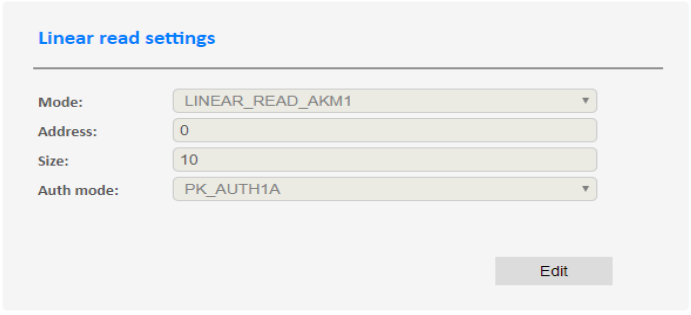

Illustration 13: Master mode section

HTTP command test

1. Open advanced settings dashboard.
2. Write HEX string in field Command.
3. Click on button Sent to UART1/UART2.

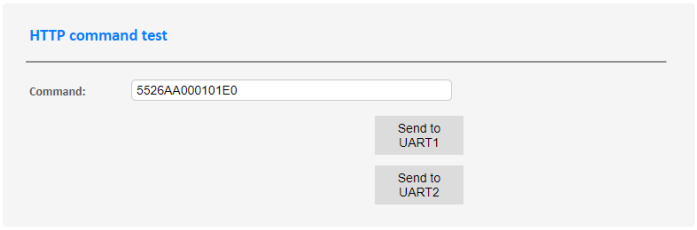

Illustration 14: HTTP command section

Basic information

1. Click on uFR Online button.
2. Basic information about device will pop up on screen (illustration 15).

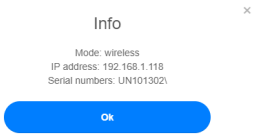

Illustration 15: Basic information

LED status table

LED colors		Description
Steady white	Steady white	Device is booted. Waiting for connection.
Steady blue	Steady blue	Device is booted in Bluetooth serial mode.
Steady cyan	Steady yellow	Device connected to WiFi network in Slave mode.
Steady blue	Steady magenta	Device connected to WiFi network in Master mode.
Blinking cyan	Blinking yellow	Device is not connected to network. AP available.
Blinking blue	Blinking magenta	Device is not connected to network. AP available.
Steady red	Steady red	Device is booted in firmware download mode.

Default settings table

Parameter	Value
Access point IP address	192.168.4.1
Server protocol	UDP
Port 1	8881
Port 2	8882
UART1 baud rate	115200
UART2 baud rate	115200
RS485 support	Disabled
Transparent mode	Enabled
Transparent device	1
Master/Slave mode	Slave
AP SSID	uFR Serial number (ONxxxxxx)
AP password	None
Login username	ufr
Login password	ufr
Discovery server port	8880

REST services

URL	Method	Parameters	Description
/info	*POST	None	Get configuration info
/scan	*POST	None	Get available WiFi networks
/togglemode	*POST	None	Toggle master/slave mode
/toggletransparent	*POST	None	Toggle transparent mode
/changetransparent	*POST	None	Change transparent device
/changeap	*POST	ssid, password	Change device AP SSID and password
/changehost	*POST	Host	Change master mode host
/changeauth	*POST	username, password	Change authorization credentials
/changesta	*POST	ssid, password	Connect to WiFi network
/setport	*POST	port1, port2	Change UDP/TCP ports
/disconnect	*POST	None	Disconnect from WiFi network
/restart	*POST	None	Reboot device
/toggleserver	*POST	None	Toggle UDP/TCP protocol. Only in slave mode
/toggleble	*POST	None	Toggle Bluetooth. Only in slave mode
/setbaud	*POST	uart1, uart2	Change UART1 and UART2 baud rates
/toggle485	*POST	None	Toggle UART2 RS485 support
/setdefault	*POST	None	Reset device to factory default settings
/togglepost	*POST	None	Toggle master mode POST request
/togglebroadcast	*POST	None	Toggle master mode UDP broadcast
/togglelinear	*POST	None	Toggle linear read. Only in master mode
/changelinearmode	*POST	mode	Change linear read mode (1-8)
/changelinearsize	*POST	begin, size	Change linear read address and size
/changelinearauth	*POST	auth	Change linear read authmode (0x60, 0x61...)
/changelinearkeyindex	*POST	index	Change linear read key index (0-31)
/changelinearkey	*POST	HEX string	Change linear read key
/uart1	POST	HEX string	Send HEX string command to UART1
/uart2	POST	HEX string	Send HEX string command to UART2
***POST request need HTTP Basic Authorization. Username and password are same as Login.**			

uFR Online Reader basic usage

In this section will be described how to use uFR Online reader.

UDP/TCP communication

- All bytes sent to UDP/TCP port 1 will be forwarded to UART1 and vice versa.
- All bytes sent to UDP/TCP port 2 will be forwarded to UART2 and vice versa.
- uFR Series libraries has support for UDP/TCP communication.
- UDP/TCP mode works in parallel with Transparent and HTTP mode.

UDP/TCP communication – Reader opening example

```
/*
Opening reader on IP address 192.168.1.112 and port 8881 for UDP communication.
*/
ReaderOpenEx(0, "192.168.1.112:8881", 'U', 0);

/*
Opening reader on IP address 192.168.1.112 and port 8881 for TCP communication.
*/
ReaderOpenEx(0, "192.168.1.112:8881", 'T', 0);
```

Bluetooth serial mode communication

- All bytes sent to Bluetooth virtual serial port will be forwarded to UART1 or UART2 based on configuration and vice versa.
- Bluetooth mode doesn’t work in parallel with UDP/TCP and HTTP mode.

Bluetooth serial mode communication – Reader opening example

```
/*
Opening reader in Bluetooth serial mode on virtual port COM34. Must disable reset on opening.
*/
ReaderOpenEx(2, “COM34”, 0, "UNIT_OPEN_RESET_DISABLE");
```

Transparent mode communication

- All bytes sent to USB serial port will be forwarded to UART1 or UART2 based on configuration and vice versa.
- Transparent mode works in parallel with UDP/TCP and HTTP mode.

Transparent mode communication – Reader opening example

```
/*
Opening reader in Transparent mode. Must disable reset on opening.
*/
ReaderOpenEx(2, 0, 0, "UNIT_OPEN_RESET_DISABLE");
```

HTTP mode communication – GetCardIdEx example

```
HTTP POST Request body sent to uFR Reader /uart1 or /uart2 > 557caa00aaccec
HTTP POST Response body sent from uFR Reader > de7ced0b08044f52dad995000000000000cb
```

Master mode POST request

- In master mode if card is detected and POST request is enabled, device sends HTTP POST request to host.

Master mode HTTP POST request structure					
-	**Form parameters**				
Linear read disabled	**SN**	**UID**	**CTRLINFO**	**ONLINE**	
Linear read enabled	**SN**	**UID**	**CTRLINFO**	**ONLINE**	**DATA**
Parameters description	**Reader serial number**	**Card UID**	**Control number from 0 to 255**	**Number 1 or 2 depends of reader**	**Linear read data as HEX string**

Master mode UDP broadcast

- In master mode if card is detected and UDP broadcast is enabled, device sends UDP broadcast.

Master mode UDP broadcast structure
80/ReaderSerialNumber/CardUID/0

UDP discovery server

- UDP discovery server is used for finding uFR readers in local network.
- Send any UDP packet to uFR reader port 8880 and wait for response.

UDP discovery server response example																		
					UART 1 PORT							**UART 2 PORT**						
	IP address				**Port**		**Type**	**Baud rate**				**Port**		**Type**	**Baud rate**			
dec	192	168	1	111	8881		‘T’	115200				8882		‘U’	250000			
hex	C0	A8	01	6F	B1	22	54	00	C2	01	00	B2	22	55	90	D0	03	00

Browser extension

- You can easily test uFR Online reader using uFR NFC Browser extension.
- Google Chrome extension link: https://chrome.google.com/webstore/detail/nfc-reader-browser-extens/kjfmmgpfhdohhcodbkaodgkidbenkgog
- Mozilla Firefox extension link: https://addons.mozilla.org/en-US/firefox/addon/nfc-reader-browser-extension/?src=search
- uFR Online reader examples are available in section below.

Browser extension example – UDP reader opening

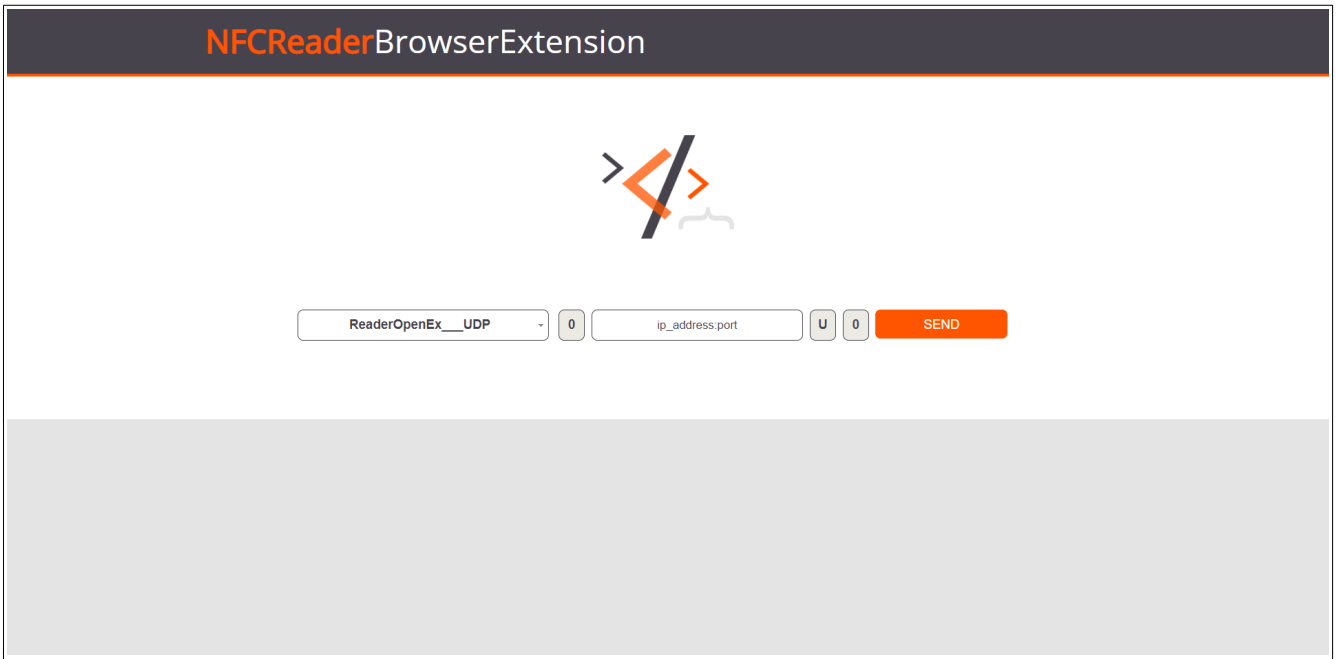

Illustration 16: Browser extension – UDP connection

Browser extension example – TCP reader opening

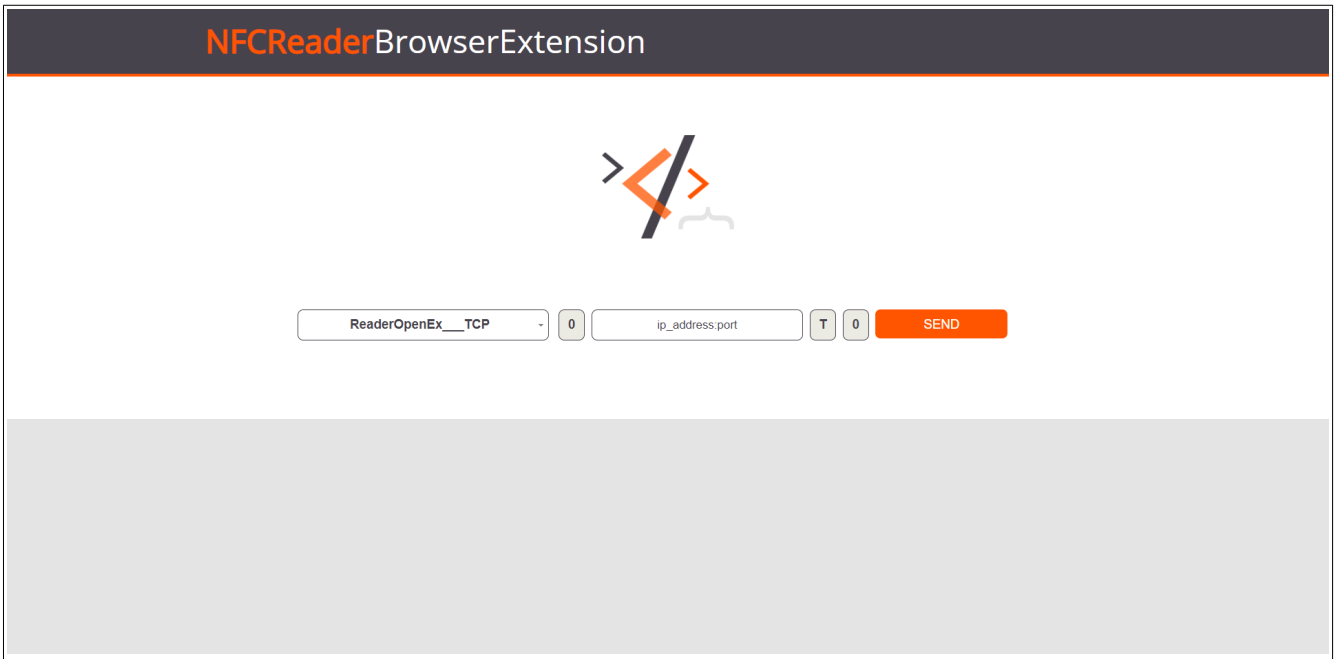

Illustration 17: Browser extension – TCP connection

Browser extension example – Bluetooth reader opening

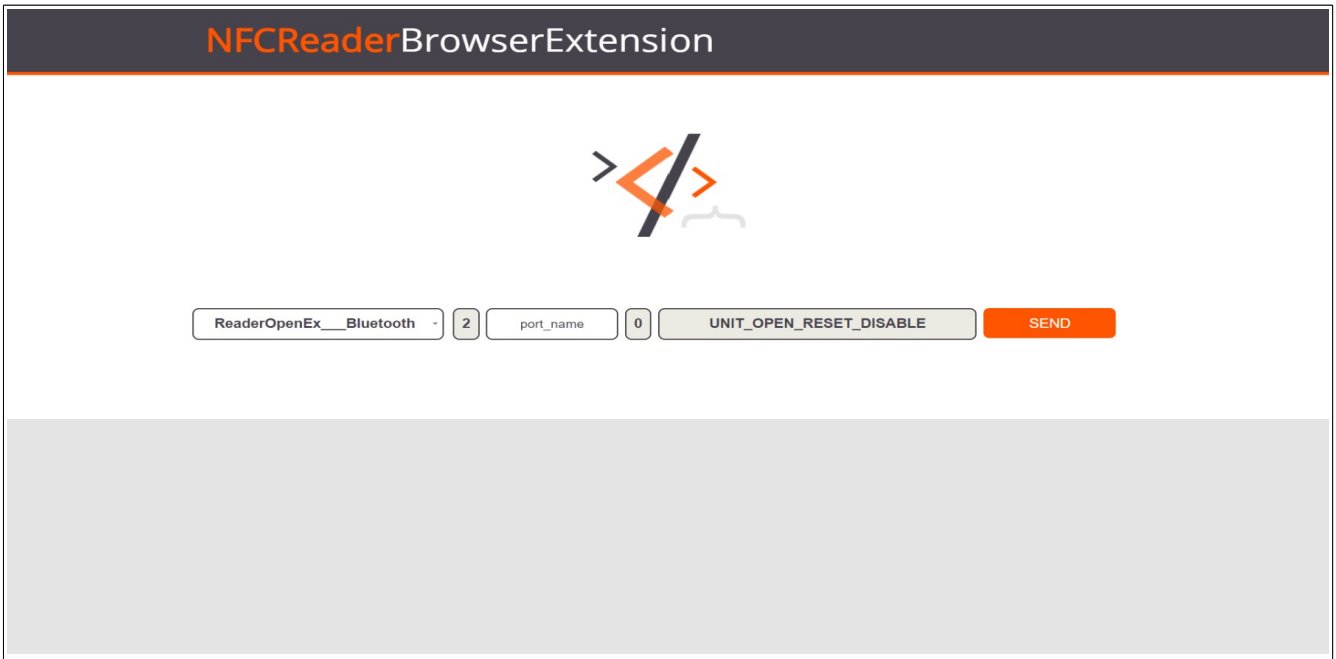

Illustration 18: Browser extension – Bluetooth connection

Browser extension example – Transparent mode reader opening

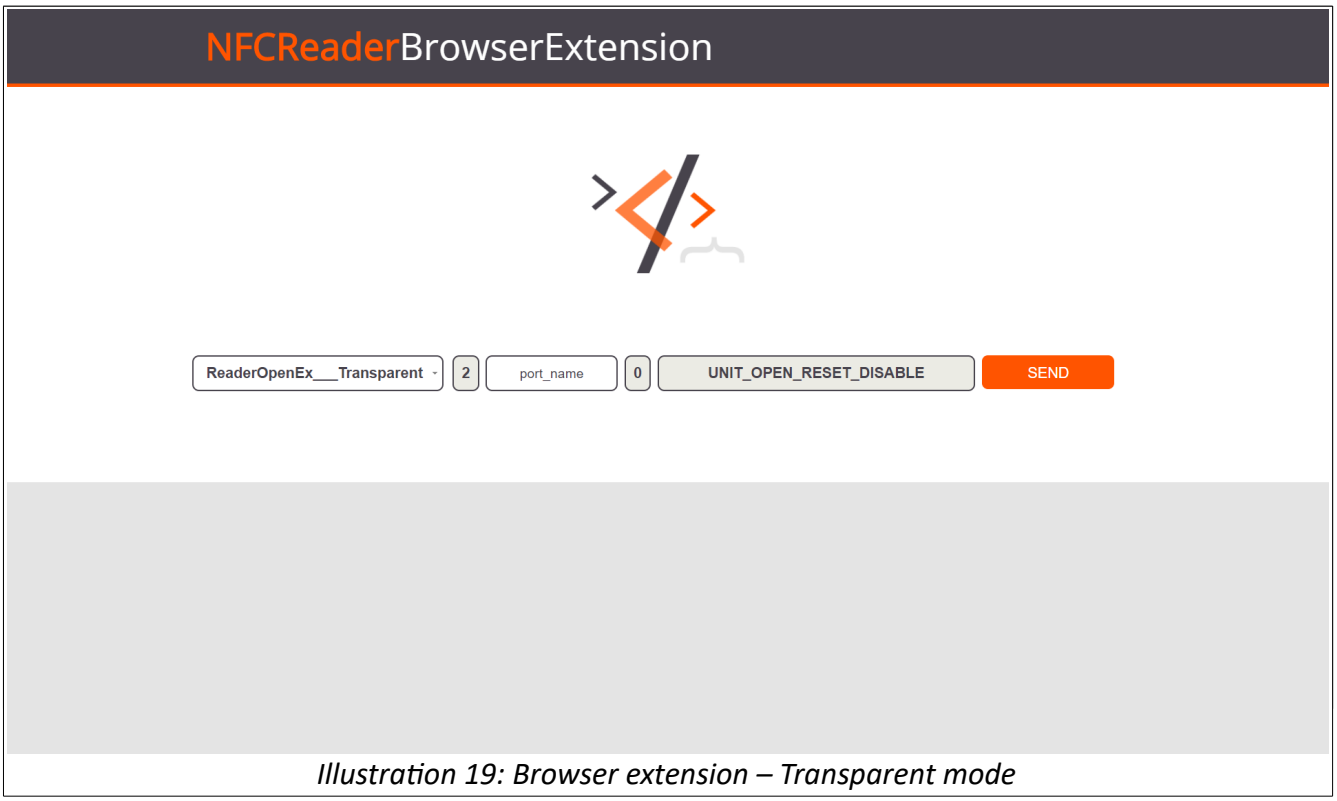

Illustration 19: Browser extension – Transparent mode

uFR Online flasher oneclick – Update tool

- To update uFR Online, download tool from: https://www.d-logic.net/code/nfc-rfid-reader-sdk/ufr_online-flasher-oneclick